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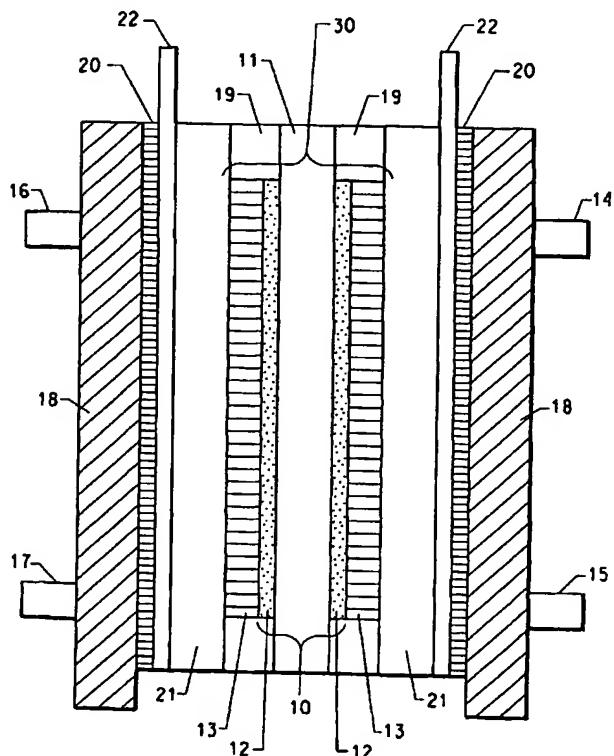
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(54) Title: SULFONIMIDE CONTAINING COMPOUNDS AND THEIR USE IN POLYMER ELECTROLYTE MEMBRANES FOR ELECTROCHEMICAL CELLS



(57) Abstract: A compound having the general structure (I), wherein $A_1?$ is a monovalent, divalent, or trivalent aromatic heterocyclic group comprising heterocyclic rings; $R_1?$, $R_2?$, and $R_3?$ are divalent fluorinated groups; m, n, and p are 0 to 3, with the proviso that m + n + p is equal to 1, 2, or 3 so that the carbon atoms of the heterocyclic rings are fully substituted by acidic fluorinated sulfonyl-containing groups; q is 0 or 1; $Y_1?$ is -OH, -NH-SO?#191-R₄?; wherein R₄? is a monovalent fluorinated group, -NH-, -NH-SO?#191-R₅?-SO?#191-NH-, or -NH-SO?#191-R₆?-A₂?-R₇?-SO?#191-NH-, wherein A₂? is a divalent heterocyclic group and R₅?, R₆?, and R₇? are divalent fluorinated groups; and $Y_2?$ and $Y_3?$ are -OH or -NH-SO?#191-R₄?; with the proviso that when m and n are each equal to 1, p is 0 to 1, and q is 0, $Y_1?$ is selected from the group consisting of -NH-, -NH-SO?#191-R₅?-SO?#191-NH-, and -NH-SO?#191-R₆?-A₂?-R₇?-SO?#191-NH-. By compound is meant either a small molecule or a repeat unit of a polymer. The invention also provides a solid polymer electrolyte membrane, a membrane electrode assembly, a gas diffusion electrode, an electrocatalyst coating composition, and a fuel cell.



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